

May 1, 2006

Dwight E. Sanders  
California State Lands Commission  
100 Howe Avenue  
Suite 100 – South  
Sacramento, CA 95825

**Re: Revised Draft Environmental Impact Report for the Cabrillo Port Liquefied Natural Gas Deepwater Port, State Clearinghouse Number: 2004021107**

Dear Mr. Sanders,

Heal the Bay is a non-profit environmental organization with over 10,000 members dedicated to making the waters of Southern California safe, healthy, and clean. Heal the Bay has actively worked to improve water quality and protect natural resources in the Santa Monica Bay and adjacent waters for over 20 years. We have reviewed the Revised Draft Environmental Impact Report (RDEIR) for the Cabrillo Port Liquefied Natural Gas Deepwater Port and find it inadequate in several areas, including the discussion of impacts to water quality and marine biological resources. Furthermore, the RDEIR insufficiently addresses many of the concerns raised in our previous comment letter regarding the preceding Draft Environmental Impact Statement for the Cabrillo Port Project. The RDEIR should not be approved until it adequately characterizes and addresses the environmental impacts associated with the proposed project.

Below, we have set forth several specific concerns regarding the DREIR. We appreciate the opportunity to offer these comments.

**1. The RDEIR fails to adequately address many of the comments raised in Heal the Bay's previous letter addressing the preceding EIR.**

In our previous comment letter, submitted on December 20, 2004, regarding the preceding Environmental Impact Statement (Docket Number: USCG-2004-16877) we identified numerous inadequacies concerning the environmental analysis. Many of our comments were insufficiently addressed, or completely ignored in the RDEIR. In addition to being offensive, failure to consider our comments contributes to the deficiency of the RDEIR. These comments, as detailed below, must be adequately addressed before the proposed project moves forward.

- a) *The RDEIR inappropriately dismisses construction-related impacts as short-term and localized*

The RDEIR depicts the construction-related impacts of the proposed project as short-term, but provides no adequate reference. It dismisses the impacts as insignificant due to an expected 12 month recovery period cited by a previous study performed in the North

and Irish Seas, but provides no justification for using this study.<sup>1</sup> We raised this concern in our previous comment letter; yet, the RDEIR still fails to explain how this study is appropriate and why recovery rates are expected to be similar given the different biota and oceanographic and climactic conditions found between the North Sea and the proposed project site. Furthermore, despite our previous comments, the RDEIR still fails to provide a comprehensive monitoring plan to evaluate the construction-related impacts on marine populations and to monitor recovery of these populations following construction. Without monitoring the impacts on benthic and demersal fish and invertebrates, as well as benthic infauna from construction, these impacts cannot be characterized as short-term and/or localized.

*b) The RDEIR fails to discuss mitigation measures for project operation during the gray whale migration*

Our previous comment letter raised concerns that the preceding environmental analysis did not adequately address how impacts to marine mammals, specifically gray whales, would be avoided and/or minimized. Although the RDEIR proposes to avoid offshore construction during gray whale migration, it does not sufficiently address this concern as it fails to propose actions that minimize the impacts operational activities may have on gray whales during the migration. The proposed project would substantially increase vessel traffic in the area and could interfere with gray whale migration as it occurs within the proposed project area and associated shipping lanes. The RDEIR is insufficient without addressing and planning for risks imposed on the gray whale migration during project operation.

*c) The RDEIR inappropriately limits burial of sessile marine biota to direct pipeline impacts*

While this concern was raised in our previous comment letter, the RDEIR continues to limit the impacts of resuspended sediments from construction-related activities to local and temporary without providing suitable justification. Additionally, the analysis erroneously limits the area of impact to the pipeline footprint. The impacts to sessile marine biota do not account for sedimentation resulting from installation of the pipeline along the seafloor. Although the RDEIR addresses the potential effects of suspended sediments (e.g. reduction of light penetration, discoloration of surface water, alteration of ambient water chemistry, and interference with filter-feeding benthic organisms), there is no discussion of the fate and transport of these suspended sediments, and no basis is provided for the assertion that the impacts would be temporary and highly localized. Without such an analysis, the evaluation of potential impacts is inadequate.

*d) The RDEIR does not provide any details for mitigation plans*

The previous comment we raised regarding the need for specifically outlined mitigation plans was entirely ignored in the RDEIR. Various mitigation and avoidance plans are

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<sup>1</sup> Lindebroom, H., and de Groot S., 1998. Impact-II, The effects of different types of fisheries on the North Sea and Irish Sea Benthic Communities. NOIZ-Rapport 1998-1, RIVO-DLO Report C003/98.

discussed throughout the RDEIR; however, no detail for these plans is provided. Without adequate detail, the effectiveness of these plans to avoid, minimize, and/or mitigate for impacts cannot be evaluated. For example, it is impossible to determine if the lighting plan will sufficiently meet the goals listed in the RDEIR (p. 4.7-52) because no lighting plan is provided. Instead, the RDEIR defers the development of this critical component to "...60 days prior to the construction."<sup>2</sup> It is essential that all management and mitigation plans be provided in the environmental review stage of the project to ensure that all impacts are accurately disclosed and all avoidance and mitigation plans are in place and appropriate.

## **2. Impacts due to impingement and entrainment of marine organisms are substantially mischaracterized**

Our previous comment letter addressed the need for a localized impingement and entrainment study at the proposed project site to characterize impacts to marine life. We appreciate the effort to analyze the impacts of the proposed project on ichthyoplankton; however, this impact analysis (Appendix H1) is deficient and misleading.

Recent evidence indicates that impingement and entrainment losses from coastal power plants can significantly impact marine fish and invertebrate populations.<sup>3,4</sup> Furthermore, zooplankton have decreased by almost 80% in the waters off southern California in the past several decades.<sup>5</sup> The proposed project is projected to withdraw 10.4 million gallons per day (MGD) of seawater and associated marine life for ballast, generator cooling, desalination, fire suppression, and other uses. The RDEIR further states that any entrained or impinged organisms will suffer 100% mortality as a result of this uptake and use. However, the ichthyoplankton impact analysis conducted in Appendix H1 severely underestimates the total plankton, egg, and larval mortality due to impingement and entrainment from the proposed project.

In our previous comment letter, we addressed the need for site-specific impingement and entrainment study. Although the RDEIR attempts to include such an analysis in Appendix H1, this study still provides no site-specific impact analysis. Instead, the ichthyoplankton impact analysis in Appendix H1 utilizes an unrepresentatively large study area, of approximately 15,000 nm<sup>2</sup> to characterize the density of eggs and larvae that could be impacted by impingement and entrainment from the proposed project. Coastal power plants are also known to cause damage to marine life due to impingement and entrainment and are required by Clean Water Act section 316(b) to conduct site-specific analyses of these impacts. Many of these facilities along the coast of California are using much smaller, and more appropriate, study areas to examine their impacts. For

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<sup>2</sup> State Lands Commission, March 2006. Revised Draft Environmental Impact Report for the Cabrillo Port Liquefied Natural Gas Deepwater Port, p. 4.7-52.

<sup>3</sup> California Energy Commission, 2005 Staff Report: Issues and Environmental Impacts Associated with Once-Through Cooling at California's Coastal Power Plants, CEC-700-2005-013-AP-A005

<sup>4</sup> Tenera Environmental Services, 2001. Morro Bay Power Plant Modernization Project. 316(b) Resource Assessment. Prepared for Duke Energy Morro Bay, LLC.

<sup>5</sup> Roemmich, D. and McGowan, J., 1995. Climatic warming and the decline of zooplankton in the California Current. *Science*. 265:1324-1326.

example, the sampling locations for impingement and entrainment studies underway at Redondo Beach Generating Station are all within 2 miles of the intake pipe. Conversely, none of the sampling locations used to estimate impingement and entrainment impacts from the proposed project are within 2 miles of the floating storage and regasification unit (FSRU). The nearest sampling locations used for the ichthyoplankton impact analysis in Appendix H1 are over 15 nm away from the proposed project site, and some sites are as far off as 100 nm. Thus, the results of this analysis are diluted by the unrepresentatively large study area do not reflect *site-specific* impingement and entrainment impacts of the proposed project.

More offensively, the RDEIR writes off the recommendation, provided by both Heal the Bay and the California Coastal Commission in previous comment letters, to conduct primary, site-specific impingement and entrainment analyses. The RDEIR specifically states, "Point-in-time ichthyoplankton sampling at the Project site would result in a very short-term data set, potentially representing as little as one or two seasons and at the most a full year of data...and could potentially produce erroneous results if they were influenced by any relatively short-term phenomenon, such as El Nino/La Nina weather patterns or other localized marine or weather patterns"<sup>6</sup> Although this statement raises potential limits of a site-specific study, the reliance on data taken from distant sampling locations results in failure of the RDEIR to consider any site-specific impacts to eggs, larvae, and plankton from the proposed project. Many short-term studies are conducted in the marine environment. The data from these studies may not have as much scientific rigor as long-term studies, but by making and clearly stating educated assumptions and addressing oceanographic and climactic variables in the analysis, short-term studies can provide useful information. Additionally, many studies underway at coastal power plants in California for compliance with Clean Water Act section 316(b) only span a two year time frame. Although short-term, these studies were designed by professional consultants and approved by Regional Water Quality Control Boards, as they will provide much needed information on entrainment and impingement. Thus, it is utterly inappropriate to write off a site-specific entrainment and impingement study at the proposed project site due to time constraints.

Furthermore, the data used for the ichthyoplankton impact study in Appendix H1 are not representative of the type or density of organisms that will be entrained and impinged by the proposed project. The analysis uses data sets from the CalCOFI database that are largely collected from offshore sampling locations. Some samples are from as far offshore as 100 nm, while the FSRU is proposed to be located only 12nm offshore. These data sets also include data from vertical sampling to depths of over 600 ft. However, the seawater intakes for the proposed project are estimated to withdraw water from depths of only 43-45 ft. Plankton densities tend to be greater in shallow and nearshore waters, and the species of plankton offshore are typically different than those found nearshore.<sup>7,8,9</sup>

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<sup>6</sup> State Lands Commission, March 2006. Revised Draft Environmental Impact Report for the Cabrillo Port Liquefied Natural Gas Deepwater Port, Appendix H1, p 4.

<sup>7</sup> Gruber et. al., 1982. Distribution of ichthyoplankton in the Southern California Bight. CalCOFI Rep., vol. 23:1972-1979.

Thus, the densities based on CalCOFI data sets used in the ichthyoplankton impact analysis are likely to underestimate and mischaracterize ichthyoplankton at the proposed project site. Clearly, a site-specific analysis is still needed to determine the impacts of impingement and entrainment by the proposed project.

### **3. The RDEIR underestimates and mischaracterizes impacts on sea turtles and marine mammals.**

The RDEIR mischaracterizes the impacts on sea turtles and marine mammals. Table 4.7-6 in the marine biological resources chapter documents the occurrence of threatened and endangered sea turtles in or near the proposed project site, but lists no reported presence of any of the four species (loggerhead, green, olive ridley, or leatherback). The RDEIR also lists northern elephant seals as not reported near the proposed project site.<sup>10</sup> The Southwest Regional Office of the National Marine Fisheries Service (NMFS) documents impacts to large marine organisms from power plants along the southern California coast through voluntary reported data. From 1998-2004, Ormond Beach Generating Station, which is located adjacent to the project, documented its take of one green sea turtle, two northern Elephant Seals, 17 Harbor Seals, and 22 California Sea Lions.<sup>11</sup> These data refute the RDEIR's statement that green sea turtles and northern elephant seals are absent near the project site. Tables 4.7-6 and 4.7-4 should be updated to reflect NMFS documentation of these species near the proposed project site.

Furthermore, the RDEIR mischaracterizes the presence of many other species of marine mammals near the project site. Tables 4.7-3, 4.7-4, and 4.7-5 list offshore bottlenose dolphin, northern right whale dolphin, short-finned pilot whale, northern elephant seal, and blue whales as not reported near the project site. This characterization is inaccurate, as the presence of these species has been documented by marine mammal surveys in the region.<sup>12</sup> The potential occurrence of these species near the proposed project site should also be updated to reflect these surveys. Additionally, blue whales and humpback whales travel through this area seasonally for feeding, and are not "unlikely" to be present in this region.<sup>13</sup> Instead, the potential occurrence of these species should be listed as "possible" to reflect their seasonal presence.

### **4. The RDEIR ignores Clean Water Act section 316(b) regulations pertaining to cooling water intake structures**

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<sup>8</sup> Moser, G. and Pommeranz, T. (1999). Vertical distribution of eggs and larvae of northern anchovy, *Engraulis mordax*, and of the larvae of associated fishes at two sites in the Southern California Bight. Fishery Bulletin vol. 97:920-943

<sup>9</sup> Bob Warner, pers. comm. April 6, 2006.

<sup>10</sup> State Lands Commission, March 2006. Revised Draft Environmental Impact Report for the Cabrillo Port Liquefied Natural Gas Deepwater Port, Table 4.7-4

<sup>11</sup> National Marine Fisheries Service Stranding Network (June 2005).

<sup>12</sup> Bearzi, M. 2003. Behavioral ecology of the marine mammals of Santa Monica Bay, California. Ph.D. Dissertation, University of California, Los Angeles

<sup>13</sup> Bearzi, M. pers. comm. May 2, 2006.

Both the marine biological resources and water quality chapters of the RDEIR fail to discuss methods for compliance with Clean Water Act section 316(b), which regulates cooling water intake structures. Clean Water Act section 316(b) requires that the best technology available be used for the location, design, construction, and capacity of cooling water intake structures in order to minimize adverse environmental impacts. The US EPA is in the process of developing regulations for Phase III facilities, which include offshore and coastal oil and gas extraction facilities that are designed to withdraw at least two MGD. California is also in the process of developing a statewide policy to implement the federal 316(b) requirements, and is expected to issue a draft policy by the end of the summer.<sup>14</sup>

The RDEIR is not complete without considering these regulations, as they may be finalized before construction is complete. The proposed project estimates that 6.34 MGD of seawater will be used for generator cooling.<sup>15</sup> The proposed project also expects that this seawater intake will cause 100% mortality to plankton, larvae, and fish eggs due to entrainment and impingement.<sup>16</sup> The new regulations are expected to mandate a lower mortality limit. Thus, Tables 4.7-7 and 4.18-8 of the marine biological resources and water quality chapters outlining major laws, regulatory requirements, and plans should include Clean Water Act section 316(b) and discussion of how the proposed project expects to comply with these regulations should be provided in the RDEIR.

##### **5. The impacts due to accidental release of pollutants are mischaracterized and do not meet water quality standards**

The RDEIR states that impacts from accidental discharge of petroleum, sewage, gray water, deck drainage and other contaminants during construction and installation are temporary and insignificant. It also assumes that any potential spill would be “small and infrequent” and only result in “localized” impacts, but provides no justification for ignoring the possibility that the proposed project may cause large and/or frequent spills.<sup>17</sup> Large contaminant spills would have adverse effects on water quality and marine biological resources and must be considered in the impact analysis.

The RDEIR also underestimates the volume of sewage that will be generated on board the FSRU. Based on US Navy and EPA calculations of sewage generation rates, the FSRU underestimates its generation of sewage by a factor ranging from 1.7 to 3.3.<sup>18</sup>

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<sup>14</sup> California State Water Resources Control Board: <http://www.swrcb.ca.gov/npdes/cwa316.html>; California Ocean Protection Council, Resolution of the California Ocean Protection Council Regarding the Use of Once-Through Cooling Technologies in Coastal Waters: [http://resources.ca.gov/copc/docs/060418\\_OTC\\_resolution\\_LH2\\_adopted\\_2006-4-20.pdf](http://resources.ca.gov/copc/docs/060418_OTC_resolution_LH2_adopted_2006-4-20.pdf)

<sup>15</sup> State Lands Commission, March 2006. Revised Draft Environmental Impact Report for the Cabrillo Port Liquefied Natural Gas Deepwater Port, Appendix H1, Table 1a, p. H1.2-1.

<sup>16</sup> State Lands Commission, March 2006. Revised Draft Environmental Impact Report for the Cabrillo Port Liquefied Natural Gas Deepwater Port, Appendix H1, p. 16.

<sup>17</sup> State Lands Commission, March 2006. Revised Draft Environmental Impact Report for the Cabrillo Port Liquefied Natural Gas Deepwater Port, p. 4.18-22.

<sup>18</sup> US Navy and US EPA, January 21, 2004. Summary Notes Cruise Ship Roundtable. [http://www.oilspilltaskforce.org/docs/meeting\\_notes/SummaryNotesCruiseshipRt2.pdf](http://www.oilspilltaskforce.org/docs/meeting_notes/SummaryNotesCruiseshipRt2.pdf)

Moreover, the RDEIR fails to consider additional volumes of sewage and other pollutants from gray water, bilge water, and deck drainage from the LNG carriers and supply vessels that service the FSRU. The cumulative impacts of the vessel discharge associated with this project could be significant and must be given due consideration.

**6. The RDEIR fails to acknowledge impending regulations for impaired waterbodies in proposed project area**

As acknowledged by the RDEIR, the proposed project area contains several impaired waterbodies, including Ormond Beach, the Santa Clara River, and Calleguas Creek. The Los Angeles Regional Water Quality Control Board (Regional Board) is responsible for developing Total Maximum Daily Loads (TMDLs) for these impaired waterbodies that determine the amount of a pollutant that can be received by each waterbody without exceeding water quality standards. The Regional Board is in the process of developing a metals TMDLs for Calleguas Creek, and is expected to develop TMDLs for the other impaired waterbodies in the near future. These TMDLs may be adopted for the impaired waterbodies in the project area before construction begins on the proposed project. Thus, the RDEIR should recognize that adoption of TMDL requirements may necessitate revisions to permits, discharge limitations, and/or Best Management Practices of the proposed project.

**7. The DREIR fails to state how the proposed project will comply with regulatory requirements in the marine biological resources and water quality sections**

While the regulatory setting section in the water quality and marine biological resources chapters of the DREIR outlines major laws, regulatory requirements, and plans in Tables 4.7-7 and 4.18-7, in many cases the DREIR fails to state how the proposed project will comply with these requirements. For example, these Tables include reference to the MARPOL Annex V prohibition against dumping garbage at sea, yet the RDEIR does not delineate how the proposed project, in both construction and operational phases, will manage trash. Additionally, the RDEIR fails to confirm that the FSRU or associated LNG carriers and supply vessels will comply with this regulation. Furthermore, Table 4.7-7 in the marine biological resources chapter lists the Marine Plastic Pollution Research and Control Act, which federally implements MARPOL Annex V, but Table 4.18-7 in the water quality chapter neglects to include this Act. This regulation is pertinent to both water quality and marine biological impacts and should be included in both tables.

Furthermore, the RDEIR ignores the likelihood, frequency, and potential significant water quality impacts of gray water discharges. It also fails to explain how gray water will be treated prior to discharge. Analyses of gray water indicate that it contains heavy metals, detergents, cleaners, nutrients, pesticides, and other contaminants.<sup>19</sup> Recent sampling of cruise ship gray water in Alaska reveals that it also contains high levels of fecal coliform bacteria and total suspended solids, as well as elevated levels of ammonia,

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<sup>19</sup> US Navy Naval Sea Sysetms Command and US EPA Office of Water. Technical Development Document: Phase I, Uniform National Discharge Standards for Vessels of the Armed Forces.

chlorine, nickel, and zinc that often exceed water quality standards.<sup>20</sup> The proposed project is located directly offshore Ormond Beach. Stretches of this beach consistently receive failing grades due to poor water quality during wet weather on Heal the Bay's Beach Report Card.<sup>21</sup> Ormond Beach is also listed as impaired for bacteria under the Clean Water Act section 303(d).<sup>22</sup> Additional nutrient and bacterial loading offshore could exacerbate these problems at Ormond Beach, further degrading water quality. The impacts due to accidental discharge of sewage, untreated gray water and other pollutants must be addressed before this project moves forward.

## **Conclusion**

The RDEIR does not address many critical issues related to potential impacts to marine biological resources and water quality. We recommend that the environmental analysis be updated and include additional studies reflecting the comments provided above. The RDEIR should not be approved until all impacts are accurately assessed, and complete mitigation and management plans are proposed. Given the proximity of the proposed project to the Channel Islands National Park and National Marine Sanctuary, the size of the proposed project, the impacts of the proposed project on marine and terrestrial species and sensitive habitats, and no previous use of this technology in California; we believe that the RDEIR must thoroughly evaluate all potential impacts caused by the proposed project.

Please feel free to contact us if you have any questions about our comments.

Sincerely,

Sarah Abramson, MESM  
Staff Scientist

Heather Hoecherl, Esq.  
Director of Science and Policy

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<sup>20</sup> Alaska Cruise Ship Initiative, Interim Report, September 2000; ADEC Commercial Passenger Vessel Environmental Compliance Program, Assessment of Cruise Ship and Ferry Wastewater Impacts in Alaska, January 2004.

<sup>21</sup> Heal the Bay, Beach Report Card: <http://www.healthebay.org/brc/>

<sup>22</sup> 2002 CWA section 303(d) List of Impaired Water Bodies in California, Approved by US EPA July 2003



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31 March 2006

Dwight E. Sanders  
California State Lands Commission  
100 Howe Avenue, Suite 100-South  
Sacramento, CA 95825

Dear Mr. Sanders:

I have reviewed the sections on cetaceans in the March 2006 revised draft EIR for the Cabrillo Port LNG. I focused on the section on "Special Status Species" under Section 4.7 relating to humpback and blue whales. These are two endangered large whale species that I have worked with extensively off the California coast and in the proposed project area.

Some of the material in the draft EIR attributed to Carretta et al. (2002) is in fact based on my work and publications. We have been conducting long-term photographic identification and monitoring of both humpback and blue whales off California since 1986. For both species we have over 1,500 different individuals identified from natural markings and which form the basis for abundance estimates and migratory movements of these two populations.

I disagree with the conclusion of the revised draft EIR that the occurrence of both species would be very unlikely near the project area. While it is true that some of the highest densities of blue whales occur along escarpments and not necessarily close to shore, it is not reasonable to infer from this that they would not occur near the project area. I know from our own observations and those of others that blue whale concentrations have sometimes occurred not far from the proposed site. This would indicate blue whale occurrence at or very near the project site should not be considered unlikely and in fact should be expected.

The document also implies that the proposed site is outside the typical habitat of especially blue whales because it is close to the mainland coast of southern California. We have sighted blue and humpback whales in waters not far from the proposed project area. There have also been sightings made by other boaters and even shore observers of blue and humpback whales not far from the project area including to the east (inshore). The proposed project area is actually in deeper water and closer to shore than many of the sightings we have made of humpback and blue whales off California. Therefore the implication that the proximity of the proposed site to shore puts it outside the typical habitat of either of these whale species is not accurate.

Please let me know if there is any additional information I can provide.

Sincerely,

John Calambokidis  
Research Biologist

## CURRICULUM VITAE

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John Calambokidis  
April 2005

John Calambokidis, Research Biologist  
Cascadia Research Collective  
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### PROFESSIONAL EXPERIENCE

**Research Biologist:** Founding member of Cascadia Research (non-profit tax-exempt org.). Served as Principal Investigator of more than 50 research studies on marine mammals, birds, and pollution (see below for examples). Wrote research proposals, conducted field research, analyzed data, and published research results for projects funded by government and private grants and contracts. Supervised staff of up to 20 researchers.  
*Cascadia Research Collective, September 1979 to present.*

**Examples of projects directed (see Cascadia Qualifications for more complete list):**

- Served as Project Director/co-Chair of multi-million dollar international collaborative study of the status of humpback whales in the entire North Pacific (SPLASH) funded by NOAA Fisheries, National Marine Sanctuary Program, National Fish and Wildlife Foundation, Commission on Environmental Cooperation, and Pacific Life Foundation.
- Abundance and movements of humpback and blue whales off California using photo-ID for the Gulf of the Farallones, Monterey Bay, and Channel Islands National Marine Sanctuaries.
- Research on the reactions of marine mammals to air guns and mitigation during seismic surveys in Washington and British Columbia under contract to U.S. Geological Survey.
- Study of impact of low-frequency sound from the ATOC sound source on the occurrence, distribution, and behavior of marine mammals under contract to UC, Santa Cruz.
- Impacts of the US Navy LFA sound source on blue and fin whales off S California using aerial surveys and photo-ID for the Office of Naval Research (subcontract from Cornell)
- Population assessment of humpback and blue whales using mark-recapture of identified individuals off California, Oregon, and Washington for Southwest Fisheries Science Center.
- Harbor seal population size, impacts of human disturbance, and habitat requirements at Woodard Bay in Puget Sound, Washington for the Wa. Dept. of Natural Resources.
- Abundance and distribution of marine mammals in the Strait of Juan de Fuca with aerial and vessel surveys and impacts of underwater blasting for the Corps of Engineers.

**Adjunct Faculty:** Taught graduate level courses on the Biology of Marine Mammals for the Masters of Environmental Studies program at the Evergreen State College.  
*The Evergreen State College, Olympia, Wa. 98505. May 1989 to present.*

**Faculty:** Developed and led a research and educational program for college students. Conducted research on vessel impact on harbor seals, biology and reproduction of harbor porpoise, and Canada goose behavior, in Glacier Bay, Alaska. Program is in cooperation with the National Park Service. Published research results in scientific journals.  
*School for Field Studies, Cambridge, MA 02139. June-August, 1981-83.*

**Biological Technician:** Conducted research on the behavior of northern fur seals on the Pribilof Islands from June to October of two field seasons. Duties included censuses, monitoring behavior, and tagging animals.  
*National Marine Mammal Laboratory, 7600 Sand Point Way NE, Seattle, WA 98115. May 1978 to September 1979.*

**Project Director:** Directed Student-Originated Study (SOS) research project funded by National Science Foundation on the biology of harbor seals and the levels and impacts of chlorinated hydrocarbon contaminants. Coordinated the activities of eight student researchers.  
*National Science Foundation through The Evergreen State College, Olympia, WA 98505. March 1977 to March 1978.*

## EDUCATION

B.S. 1977 (Biology), The Evergreen State College, Olympia, WA.

## PUBLICATIONS (scientific journals and books)

Goldbogen, J.A., J. Calambokidis, R.E. Shadwick, E.M. Oleson, M.A. McDonald. In Press. Kinematics of diving and lunge-feeding in fin whales. Accepted in *Journal of Experimental Biology*.

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Calambokidis, J., G.H. Steiger, D.K. Ellifrit, B.L. Troutman and C.E. Bowlby. 2004. Distribution and abundance of humpback whales and other marine mammals off the northern Washington coast. *Fisheries Bulletin* 102(4):563-580.

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Krahn, M.M., D.P. Herman, G.M. Ylitalo, C.A. Sloan, D.G. Burrows, R.C. Hobbs, B.A. Mahoney, G.K. Yanagida, J. Calambokidis, and S.E. Moore. 2004. Stratification of lipids, fatty acids and organochlorine contaminants in blubber of white whales and killer whales. *Journal of Cetacean Research and Management* 6(2):

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- Ross, P.S., S. Jeffries, M. Yunker, R.F. Addison, M.G. Ikonomou and J. Calambokidis. 2003. Harbour seals (*Phoca vitulina*) in British Columbia, Canada, and Washington State, USA, reveal a combination of local and global PCB, PCDD and PCDF signals. *Environ. Toxicol. Chem.*, 23(1), 157-165.
- Jeffries, S., H. Huber, J. Calambokidis and J. Laake. 2003. Trends and status of harbor seals in Washington State: 1978-1999. *Journal of Wildlife Management* 67(1):201-219.
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- Calambokidis, J. and L. Kretchmar. 1977. Observations of a suburban population of harbor seals in Eld Inlet, Puget Sound. Annual Meeting of the Pacific Northwest Bird and Mammal Society, 16 April 1977, Olympia, Washington.

### **EXAMPLES OF PARTICIPATION IN PROFESSIONAL ORGANIZATIONS**

- Member of Scientific Advisory Committee for Olympic Coast National Marine Sanctuary
- Member of Marine Mammal Specialist Group for Committee on the Status of Endangered Wildlife in Canada
- Scientific Reviewer for scientific journals (incl. Marine Mammal Science, Marine Ecology Progress Series, Biological Conservation)
- Scientific Advisor for American Cetacean Society
- Alternate member on Marine Mammal Commission Federal Advisory Committee on Acoustic Impacts
- Board of Directors for Cascadia Research Collective
- Member (research) of NMFS North Pacific Take Reduction Team
- Member of Recovery Team for blue, fin, and sei whales in Canada
- Member of North Pacific Right Whale Recovery Team, Canada
- Charter member in the Society for Marine Mammalogy
- Scientific Review Panel (1986-87) for Puget Sound Water Quality Authority